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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/691,790

10/23/2003

Joseph D. Coughlan III

EH-10784 (02-609)

7184

34704 7590 04/12/2007
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EXAMINER

KIM, TAE JUN

ART UNIT

PAPER NUMBER

3746

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/691,790

Applicant(s)

COUGHLAN ET AL.

Examiner

Ted Kim

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) 9-14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :10/23/2003, 04/11/2005 06/30/2005.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I in the reply filed on 03/08/2007 is acknowledged. The traversal is on the ground(s) that "Although separately classified, the search classes of the two groups are expected to largely, if not completely, overlap". This is not found persuasive because while there may be some overlap, each of the subcombinations is separately usable and the search and examination of both groups would constitute a burden on the Examiner.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 9-14 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 03/08/2007.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over DuBell et al (5,758,503) in view of optionally Snyder (2002/0116929). DuBell et al

teach a gas turbine engine combustor comprising: an inboard wall; an outboard wall; and a forward bulkhead extending between the inboard and outboard walls [inherent components of the annular combustor, see col. 4, lines 1-8, alternately, see the Snyder reference] and cooperating therewith to define a combustor interior volume, wherein, at least a first wall of said inboard and outboard walls comprises: an exterior shell 14 and an interior heat shield 12 comprising a plurality of panels 12 having: an interior surface; an exterior surface; a perimeter having leading (near 26) and trailing (near 28) edges and first and second lateral edges 30; a plurality of cooling gas passageways 38 having inlets on the panel exterior surface and outlets on the panel interior surface; and a rail 26, protruding from the exterior surface and recessed from the leading edge along a majority of the leading edge; wherein the rail contacts the shell 14; wherein the first wall is the outboard wall. DuBell et al do not teach the ranges of the rail, i.e. the rail being recessed by 3-10 mm from the leading edge, the rail being recessed along the entire front edge by at least 3.5 mm; wherein there is a gap between the exterior surface and the shell having a height of 1-3 mm. However, these ranges are regarded as an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges, as an obvious matter of finding the workable ranges in the art. DuBell et al do not teach the outer and inner wall & panels have similar cooling structure. Snyder teaches that it is old and well known in the annular combustor art to make the inner wall and panel 80 and outer wall and panel 46 have similar cooling (col. 3, lines 13+). It would have been obvious to one of ordinary skill in the art to apply

the teachings of DuBell et al. to both the outer and inner wall panels, as taught by Snyder, as the typical cooling arrangement used in the art for the annular combustor wall and panels.

5. Claims 1-5, 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sandelis (6,029,455). Sandelis teaches a gas turbine engine combustor comprising: an inboard wall; an outboard wall; and a forward bulkhead extending between the inboard and outboard walls [inherent components of the annular combustor, see col. 3, lines 5+, alternately, see the Snyder reference] and cooperating therewith to define a combustor interior volume, wherein, at least a first wall of said inboard and outboard walls comprises: an exterior shell; 4 and an interior heat shield comprising a plurality of panels 10a having: an interior surface; an exterior surface; a perimeter having leading and trailing edges and first and second lateral edges; a plurality of cooling gas passageways 17-19 (col. 4, lines 33-37) having inlets on the panel exterior surface and outlets on the panel interior surface; and a rail 22, protruding from the exterior surface and recessed from the leading edge along a majority of the leading edge; wherein the rail 22 contacts the shell 4; wherein the first wall is the outboard wall; wherein the first wall is the outboard wall; wherein the shell has a plurality of apertures 26, positioned to direct cooling air against the panel exterior surface between the leading edge and the rail; Sandelis does not teach the ranges of the rail, i.e. the rail being recessed by 3-10 mm from the leading edge, the rail being recessed along the entire front edge by at least 3.5 mm; wherein there is a gap between the exterior surface and the shell having a height

of 1-3 mm. However, these ranges are regarded as an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges, as an obvious matter of finding the workable ranges in the art. Sandelis does not teach the outer and inner wall & panels have similar cooling structure. Snyder teaches that it is old and well known in the annular combustor art to make the inner wall and panel 80 and outer wall and panel 46 have similar cooling (col. 3, lines 13+). It would have been obvious to one of ordinary skill in the art to apply the teachings of Sandelis to both the outer and inner wall panels, as taught by Snyder, as the typical cooling arrangement used in the art for the annular combustor wall and panels.

6. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pidcock et al (6,408,628) in view of Halila (5,363,643). Pidcock et al teach a gas turbine engine combustor comprising: an inboard wall 21; an outboard wall 22; and a forward bulkhead (unlabeled, but contains the fuel injector 25 at its downstream end) extending between the inboard and outboard walls and cooperating therewith to define a combustor interior volume, wherein, at least a first wall of said inboard and outboard walls comprises: an exterior shell; and an interior heat shield comprising a plurality of panels 29A, 29B having: an interior surface; an exterior surface; a perimeter having leading and trailing edges and first and second lateral edges; a plurality of cooling gas passageways (46, 46A, 146) having inlets on the panel exterior surface and outlets on the panel interior surface; and a rail 144, protruding from the exterior surface and recessed from the leading edge along a majority of the leading edge; wherein the rail contacts the shell; wherein the

first wall is the outboard wall; wherein the first wall is the outboard wall and wherein the inboard wall comprises: an exterior shell; and an interior heat shield 29A, 29B comprising a plurality of panels having: an interior surface; an exterior surface; a perimeter having leading and trailing edges and first and second lateral edges; a plurality of cooling gas passageways having inlets on the panel exterior surface and outlets on the panel interior surface; and a rail, protruding from the exterior surface and recessed from the leading edge along a majority of the leading edge; wherein the shell has a plurality of apertures 140, positioned to direct cooling air against the panel exterior surface between the leading edge and the rail 144 (see Fig. 2); wherein the apertures are positioned to preferentially direct said cooling air along areas circumferentially aligned with fuel injectors 25. Pidcock et al do not teach the ranges of the rail, i.e. the rail being recessed by 3-10 mm from the leading edge, the rail being recessed along the entire front edge by at least 3.5 mm; wherein there is a gap between the exterior surface and the shell having a height of 1-3 mm. However, these ranges are regarded as an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges, as an obvious matter of finding the workable ranges in the art.

In an alternate interpretation, the pedestals 45 projecting from the are in rows parallel to the rail 144 in Fig. 10 and very near the leading edge. These serve to increase the heat exchange area (col. 4, lines 53-55). Halila, see Fig. 16, teaches rails 100a which are near the leading edge (72) and parallel to the other rails 100a. These rails also serve

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to function to increase the heat exchange area (col. 11, lines 40-57). It would have been obvious to one of ordinary skill in the art to replace the pedestals near the leading edge with rails, as equivalent structures in the art, and thus would appear to be in the claimed range. Alternately, these ranges are regarded as an obvious matter of finding the workable ranges in the art. It would have been obvious to one of ordinary skill in the art to employ the claimed ranges, as an obvious matter of finding the workable ranges in the art.

Contact Information

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Ted Kim whose telephone number is 571-272-4829. The Examiner can be reached on regular business hours before 5:00 pm, Monday to Thursday and every other Friday.

The fax number for the organization where this application is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ehud Gartenberg, can be reached at 571-272-4828. Alternate inquiries to Technology Center 3700 can be made via 571-272-3700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). General inquiries can also be directed to the Patents Assistance Center whose telephone number is 800-786-9199. Furthermore, a variety of online resources are available at <http://www.uspto.gov/main/patents.htm>



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